

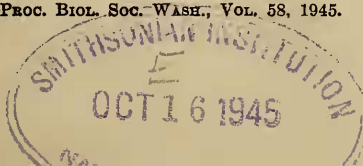
PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTONTHE CIXIINI OF THE LESSER ANTILLES
(HOMOPTERA : FULGOROIDEA).

BY R. G. FENNAH.

In the Lesser Antilles the tribe Cixiini (Cixiidae) includes only members of the subtribe Cixiina: these fall into three groups, one of which has been given generic status by Uhler under the name *Vincentia*, on the basis of a single female which forms the type of *interrupta*, while the others fall into *Oliarus* Stål as currently recognized. One of the latter is not congeneric with the Philippine genotype of *Oliarus* (*Cixius walkeri* Stål) and is separated below as a new genus; the other agrees approximately with the genotype in general facies but differs in the shape of the areolets of the vertex and in tegminal venation and is here considered as a new subgenus pending a comparison of all generic structures with those of *walkeri* Stål.

The characters used in the separation of genera are sufficiently obvious in the generic descriptions given below. Here it is enough to draw attention to the value of the shape of the system of areolets developed between the disc of the vertex and the frons, the concavity or convexity of the frons in relation to its lateral margins, the proportions of the vertex, the length of the rostrum, the size and degree of prominence of the median ocellus, the position of the fork of Sc and R in the tegmina, the degree of tuberculation of the veins, the shape of the apical areoles in the wing (with due allowance for variation), the shape of the anal segment in the female, together with that of the first valvulae and of the hind margin of the eighth sternite. The anal segment of the male is of value in the case of the species discussed below, but may prove to be unreliable for generic segregation, as on the whole it is a rather plastic structure in the Cixiidae.

The genus *Vincentia* Uhl. has been placed by Muir (*Pan-Pacific Ent.* 1925, 1:3:100) in synonymy with *Cixius* Latreille. This is incorrect as



Vincentia has a much narrower and longer vertex, a much narrower discal area on the pronotum, a short, broad and convex female anal segment, as opposed to the narrow and parallel-sided anal segment of *Cixius*; *Vincentia* is moreover quinquecarinate, though in the type the intermediate carinae are very obscure. The genus *Paracixius* erected by the writer with *armiger* as its haplotype (*Am. Mus. Novit.* 1944, 1265:1) is preoccupied by *Paracixius* Wagner, proposed as a subgenus of *Cixius*. *Paracixius* Fenn. is accordingly here replaced by the new name *Oliarissa*.

The writer is indebted to Mr. W. F. China for comparing Lesser Antillean specimens with material in his charge, and for making a drawing of the male genitalia of *Oliarus concinnulus* Fowl. from the type: this has been included in plate XII for general information.

The types of all species described as new have been deposited in the U. S. National Museum.

In the genus *Vincentia* species differ in the shape of the armature of the aedeagus in the male, and in the arrangement of sclerotised plates in the outer portion of the genital chamber in the female. In order to determine whether in each species the aedeagal processes fit during copulation into a perfectly corresponding series of notches and protuberances in the genital chamber, dissections were made of pairs of *V. christopheri*, *V. hewanorrae*, and *V. grenadana* (all described below) taken and immediately killed while *in copula* (see figures 48, 49 and 50). It was found that with the exception of a slight catch (Fig. 50, A) formed by a simple median prominence, which is present in all species examined near the external opening of the genital chamber, no mechanism exists for locking or positioning the aedeagal processes during mating. It was noted that in one female taken *in copula* and in several others which had laid their eggs that the plates could scarcely be differentiated from the remainder of the wall without staining, and were equally flexible. Moreover, it was seen that even in a single species, represented by material collected within a radius of 400 yards, the aedeagus is not always inserted to exactly the same extent in different mating pairs (in a series of nine): the determining factor appears to be the point at which the first and second valvulae of the ovipositor are compressed between the proximal portion of the genital styles and the medioventral process of the male pygofer (see figure 51); if it is half-way from their base, for instance, the aedeagus is inserted farther than it could be if the distance were two-thirds. The variation observed in this respect was not large but in view of the multiplicity of shapes assumed by the aedeagal processes would be sufficient to preclude any close mutual adaptation of sclerotised parts in the genital chamber, even if provision for such could be detected. In the writer's opinion the aedeagal processes in this and in certain other families of Fulgoroidea serve to dilate the walls of the genital chamber; they may also lend a certain rigidity to the aedeagus and in a few cases form a very simple type of locking device.

KEY TO WEST INDIAN CIXIINA.

- (1) (2) Tegmina with M3+4 forking near to main fork of media, M 1+2 forking much farther from main fork.....*Mnemosyne* Stål.
- (2) (1) Tegmina with fork of M 1+2 nearer to main fork of M than is the fork of M 3+4.....(3)
- (3) (4) Rostrum with subapical joint attaining hind trochanters, species 7 mm. or more in total length.....*Cyclopolarus* gen. nov.
- (4) (3) Rostrum with subapical joint not reaching to hind trochanters, species 6 mm. or less in total length.....(5)
- (5) (6) Apex of rostrum surpassing hind trochanters, anal segment of female ovate, that of male not forming a deflexed medial point distally.....*Vincentia* Uhler
- (6) (5) Apex of rostrum scarcely attaining hind trochanters, anal segment of female broadly triangular, that of male distally forming a median deflexed point.....*Oliarus* Stål, subgen. *Melanoliarus* nov.

CYCLOPOLIARUS, new genus.

Vertex oblong, not much produced before eyes, width across basal angles to length along one side 1:1.8, disc hollowed out, sometimes a short median carina present basally, anterior margin truncate, lateral margins straight, diverging basad, posterior margin rectangularly excavate, transverse carina arising one-third from apex, areolets small, broadly quadrangular, a quadrate cell medially 1.5 times as long as broad; frons with lateral margins expanding to below level of antennae then incurved, lateral margins expanded laterad or antero-laterad, median ocellus present, median carina percurrent on frons and clypeus, broadly forked at extreme base, rostrum long, subapical segment attaining hind trochanters, apical segment at least overlapping base of fifth sternite in living material. Pronotum short, a carina on each side following hind margin of eyes, posterior margin excavate in an obtuse angle; mesonotum broader than long with five carinae, the intermediate carinae extending from basal margin to one-third from apex; hind legs slender. Tegmina with Sc+R 1.2 to 1.5 times length of Sc between fork of Sc+R and branch to stigma, M forked at M—Cu cross-vein, basad of stigma, Cu 1 forking somewhat basad of Sc+R fork, six subapical areoles, R usually with three branches at margin, M1 with two, M2 simple, M 3+4 forked once, Cu 1a and Cu 1b simple. Wings with R forked rather widely at apex, M with a narrower fork about a third longer. Anal segment of female about as long as preceding three tergites, broader than long (1.9:1), margins almost straight, strongly converging distally. Ovipositor with broad portion of first valvulae occupying two-thirds to three-quarters of total length of first valvulae. Anal segment of male ovate in dorsal view. Pygofer with lateral angles bluntly rounded, medioventral process acutely triangular. Genital styles each consisting

of a straight limb terminating in a quadrate lobe, with a triangular flange or a curved spine on inner face.

Genotype, *Oliarus biperforatus* Fenn. Proc. U. S. Nat. Mus., Vol. 95, p. 419, 1945.

KEY TO SPECIES OF CYCLOPOLIARUS

- (1) (2) Lateral margins of frons foliately expanded antero-laterad, M 1+2 about a quarter or one-fifth length of M 3+4.....(3)
- (2) (1) Lateral margins of frons expanded laterad, not foliate.....(7)
- (3) (4) M 1+2 one-quarter length of M 3+4, tegmina not infusate at margin.....*naparimae* n. sp.
- (4) (3) M 1+2 one-fifth length of M 3+4, tegmina brown at margin.....(5)
- (5) (6) Clypeus, labrum, and disc of frons piceous.....*biperforatus* Fenn.
- (6) (5) Sides of labrum, a spot on frons at each side of middle at level of median ocellus piceous.....*omani* Metcalf
- (7) (8) Median carina of frons forked one-third from base.....*atkinsae* Myers
- (8) (7) Median carina of frons forked one-seventh from base.....(9)
- (9) (10) Ovipositor with first valvulae broad for three-quarters of length, a tooth on sternite at base on outer side of each valvula.....*montserratensis* n. sp.
- (10) (9) First valvulae broad for six-sevenths of length, tooth scarcely visible.....*jamaicensis* n. sp.

Cyclopolarus naparimae, new species.

(Figs. 20, 22-25, 64)

Male. Length, 6.5 mm.; tegmen, 7.3 mm. Female. Length, 7.1 mm.; tegmen, 7.7 mm. Reddish-brown, legs testaceous; tegmina hyaline, stigma pallid except for a fuscous line on distal margin, veins reddish-brown basally, testaceous at middle, fuscous distally, the distal transverse veins clouded with brown; both tegmina and wings slightly tinged with brown near apical margin.

Anal segment asymmetrical in type specimen, tectiform, subovate in dorsal view tapering to a blunt point directed obliquely to left. Pygofer with lateral margins subangulately rounded; medioventral process acutely triangular. Aedeagus tubular, a slightly sinuate spine arising at base on left, directed posteriorly, a shorter spine on right side one-third from base directed obliquely anteriorly; a small sclerotised plate at base of flagellum ventrally, from which arise a long stout S-shaped spine on right side and a broad stout limb directed obliquely to left, which gives off a long stout spine curving mesad, forward and laterad through 180°, a small spine posterior to this directed mesally, and a very long spine curving mesally and anteriorly, then curving sharply to point posteriorly in its distal half; flagellum with two parallel curved callused ridges on its upper surface, the dorsal ridge smaller than that on which it rests, pointed at one end.

Ovipositor with broad basal portion of first valvulae occupying rather more than half of total length of valvulae. Margin of eighth sternite at base of first valvulae not pointed, protruding in a rounded lobe.

Described from one male and one female collected by P. L. Guppy at La Advenance, Princetown, Trinidad, B.W.I. (June 5, 1912) on cacao. This species is readily distinguished by the genitalia and by its smaller size and sparser marking from *omani* and *biperforatus*. This section of the genus, apart from being distinguished by the antero-oblique dilation of the lateral margins of the frons, appears to include species in which the predominant colour is brown, varied with ochraceous in some species, the colour including the tegminal markings and the veins, while in great dilution it sometimes suffuses the whole tegmen. The second section of the genus seems to include only species which are dorsally deep fuscous to piceous, apart from reddish-brown marginal tints, and which have clear wings, occasionally marked with deep fuscous, and a very dark stigma. If, with the addition of new species to the genus, this correlation holds good two subgenera will need to be recognised.

Cyclopolarus montserratensis new species.

(Fig. 43).

Female. Length, 5.9 mm.; tegmen, 6.9 mm.

Piceous; lateral margins of vertex, frons, clypeus, a patch below fenestrae, second segment of rostrum, carinae of pronotum, legs except femora pallid testaceous, lateral and intermediate carinae on mesonotum reddish brown; tegmina hyaline, veins, stigma, apex of cell Cu1b and sutural margin from base to junction with claval vein fuscous.

Ovipositor with broad basal portion of first valvulae extending for three-quarters length of second valvulae. Hind margin of eighth sternite produced in a point at base of each first valvula.

Described from one female taken by the writer at 1,000 ft. in the drier type of rain-forest, Central Range, Montserrat, B.W.I. (February 20, 1940). This species is distinguished by its genitalia and colouration; it is rather larger than the following, which it most nearly resembles. The rostrum in the type reaches to the seventh sternite but can only be compared with that of the same sex in other species, as in all near-oliarine genera this organ shows sexual dimorphism in regard to length.

Cyclopolarus jamaicensis, new species.

(Figs. 14-19, 21, 53.)

Male. Length, 4.7 mm.; tegmen, 5.0 mm. Female. Length, 5.0 mm.; tegmen, 5.4 mm. Tegmina hyaline with a fuscous band at base between Sc+R+M and first claval vein, a second band at middle between forks of Sc+R and Cu 1.

Brownish-testaceous on ventral surface; vertex and frons fuscous to piceous, carinae pale, remainder of dorsum dark reddish-brown, legs pale.

Aedeagus with two long straight spines arising at base on left side directed posteriorly, a long stout spine arising near base of flagellum on

left, curved and directed anteriorly, a small spine ventrally at base of flagellum directed to left, a long slightly curving spine arising ventrally on left side of aedeagus near base directed posteriorly; flagellum with two small spines near apex on outer margin, a long sickle-shaped spine on inner margin. Genital styles narrow at middle in side view, large and subquadrate distally with a narrow, almost spinose, curved lobe on inner face.

Ovipositor with broad basal portion of first valvulae not quite four-fifths of total length of valvulae. Hind margin of eighth sternite not or scarcely pointed at base of each first valvula.

Described from two males and two females collected by the writer near Mona House, near Liguanea, Jamaica (November 25, 1940) on logwood and *Agave* sp. This species is distinguished by the colouration and by the male and female genitalia. The rostrum in the female is as long as in *montserratensis*.

VINCENTIA Uhler.

Uhler 1895 *Proc. Zool. Soc. Lond.* : 67. Genotype, *V. interrupta* Uhler *loc. cit.*

Vertex along one side 1.4 times longer than wide between basal angles, anterior margin transverse, lateral margins diverging slightly basad, posterior margin subrectangularly excavate, transverse carina arising two-thirds from base of lateral margin, joining a small quadrangular cell medially at apex, disc hollowed out, devoid of a median longitudinal carina; frons slightly curved in profile, lateral margins expanded laterally, median carina slightly broadened rather than forked at base, percurrent through clypeus, median ocellus very obscure, not half as large as lateral ocelli. Tegmina with veins distinctly granulate, Sc+R at least 1.3 times as long as Sc between Sc+R fork and stigmal fork. Wings with apical fork of R enclosing an areole one-third length of that enclosed by apical fork of M. Anal segment of male broadly ovate in dorsal view, widest distad of middle, apical margin slightly reflexed. Pygofer with lateral angles subacute, medioventral process with parallel horizontal ridges. Genital styles broad at base, strongly tapering at middle, expanded apically in a subovate lobe, with a flange of varying shape on inner face. Anal segment of female with sides deflexed, lateral margins as seen in dorsal view convex; not large, rounded-quadrate as seen from above. Hind margin of eighth sternite not produced in a point at base of first valvulae. Ovipositor with broad basal portion of first valvulae extending for about three-quarters of their total length. Egg bluntly ovoid, smooth. The sclerotised parts of the body of all known species are pale, testaceous, or reddish or sepia brown, not piceous.

Vincentia interrupta Uhler.

(Figs. 35-37, 42, 54.)

Male. Length, 3.6 mm.; tegmen, 3.7 mm. Female. Length, 4.1 mm.; tegmen, 4.9 mm. Aedeagus tubular, flagellum curved to left and

bent anteriorly in its distal half; ventrally three long spinose processes arising near base, that on left slender, tapering, slightly curved, middle process swollen at base, then straight to its distal point where it becomes swollen and bent through 90° and again through 75° to point obliquely anteriorly, the spine on right stout, tapering, subangularly bent at middle; the sclerotised support of left side of aedeagus with a short curved prominence; flagellum with a curved spine on outer side at middle and a longer straight spine at apex.

Redescribed from three males and five females taken at Three Rivers Settlement, St. Vincent, by the writer (August 23, 1941). Mr. China has kindly compared a male specimen with Uhler's female type. The species is distinguished by the shape of the aedeagal armature: it would seem that Sc is proportionately longer in relation to Sc+R than in other species, but a longer series is required to settle this point.

***Vincentia hewanorrae*, new species.**

(Fig. 26–30, 46, 47, 49, 50, 55, 63.)

Male. Length, 3.5 mm.; tegmen, 3.7 mm. Female. Length, 4.1 mm.; tegmen, 4.9 mm. Aedeagus tubular, flagellum curved to left and bent anteriorly in its distal half; at base a sclerotised plate expanded in unequal pointed lobes; ventrally two long spinose processes arising near base, that on left side bent through 90° , the other forming an abrupt loop through 225° to point anteriorly; sclerotised support of left side of aedeagus with its upper edge produced distally into a straight spine and a stout, small, curved hook; flagellum with a broad curved spine on inner edge and two spines on outer margin at apex, the longer curved mesally, the shorter not more than half as long as preceding, directed anteriorly. Genital styles with upper margin of distal lobe subangulately bent.

Described from 11 males and 19 females collected by the writer on shrubs of drier type rain-forest, Morne Fortunée, St. Lucia, B.W.I. on Feb. 3, 1940 and on various dates in 1941 and 1943. The species is distinguished by the shape of the angles on the basal flanges of the aedeagus, and by that of the aedeagal armature, as well as by the shape of the upper margin of the distal lobe of the genital styles, which is subangulate in this species and rounded in *interrupta*. The specific name is taken from the Indian name for St. Lucia, in which the species is apparently endemic.

***Vincentia christopherei*, new species.**

(Figs. 31–34, 41, 52.)

Male. Length, 3.5 mm.; tegmen, 3.5 mm. Female. Length, 3.2 mm.; tegmen, 4.5 mm. Brown; disc of mesonotum and clypeus distinctly ochraceous, lateral margins of vertex, frons, and clypeus, a patch below fenestrae, second segment of rostrum, legs and abdominal sternites at middle pallid yellow. Tegmina hyaline with testaceous veins, forks of Sc+R, and Cu1, transverse veins, stigma and sutural margin near junction with claval vein fuscous.

Aedeagus tubular, flagellum curved to left and bent anteriorly in its distal half; at base a sclerotised plate produced on right into a small decurved hook, on left into a lobe with four distal teeth; ventrally two long spinose processes arising near base, the spine on left side bent through 75° in its apical third, the other swollen distally and bent through 270° to point to right; sclerotised support of left side of aedeagus with its upper edge forming a short ridge and a short stout curved hook; flagellum with a short broad spine at its base, a spine on outer margin at middle and a longer spine arising on inner margin two-thirds from base, lying obliquely across flagellum, apex of flagellum pointed. Genital styles tapering to middle then expanding into an ovate lobe flattened on its outer margin, a prominent triangular flange on its inner face.

Described from 12 males and 13 females collected by the writer at Old Road, St. Kitts, B.W.I. (Jan. 23, 1942) on *Coccoloba uvifera* and *Acacia* sp. This species is distinguished by the shape of the aedeagal armature.

Vincentia grenadana, new species.

(Figs. 38-40, 48, 51.)

Male. Length, 3.7 mm.; tegmen, 3.7 mm. Female. Length, 4.1 mm.; tegmen, 5.0 mm.

Brown; lateral margins pallid yellow.

Aedeagus tubular with flagellum bent strongly to right and expanded distally, ventrally near base a short rectangulate spine directed posteriorly; dorsally, arising from base a long sinuate spine overlying aedeagus for its whole length, looped through 180° at its apex; laterally a long stout spine curved through 180° below aedeagus and recurved at apex; flagellum expanded distally, apical margin truncate with a slender sinuate spine. Genital styles narrowed to middle, expanding distally into a lobe curved anteriorly at tip, with a large triangular flange, almost as large as the lobe itself, on its inner face.

Described from 4 males and 7 females collected by the writer on *Miconia*, *Inga* and low bushes at Mardi Gras, Grenada (October 20, 1943). This species is distinguished by the shape of the aedeagal armature and by the shape of the genital styles.

Vincentia substigmatica (Leth.), new combination.

Diacira substigmatica Lethierry, 1881 *Ann. Soc. Ent. Belgique* 25: 13.

The size (5 mm.), reddish-brown colour and paler legs support the view that *substigmatica* must be placed in *Vincentia*. The species is probably endemic in Guadeloupe and the inclusion of the distribution in the original description must be considered of importance in fixing the species for subsequent recognition.

OLIARUS Stål.

Stål 1862 *Berl. Ent. Zeit.* 6: 306. Genotype, *O. walkeri* Stål 1859 *Eugen. Resa*: 272. Distant 1906.

Melanoliarus, new subgenus.

Vertex narrow, length of one side 1.3 times width across basal angles, disc hollowed out, devoid of a longitudinal median carina, transverse carina arising two-thirds from base joining a small quadrate cell before anterior margin; frons with disc slightly sloping away from median carina, lateral margins not foliate, produced laterally, median carina broadly forked at basal seventh, median ocellus distinct; rostrum not attaining posterior trochanters. Pronotum with lateral carinae following hind margins of eyes; mesonotum quinquecarinate, less obviously so in the female. Hind tibiae relatively short and stout with a minute spine basally, a larger spine at middle and a large tooth and four small teeth at apical border. Anal segment of male with apical margin strongly deflexed, forming a point below telson. Pygofer with posterior margin angularly convex with a slight indentation medially. Genital styles in side view narrowest at middle, expanded into a lobe distally that curves anteriorly at apex, a stout, subacutely pointed lamina on its inner face. Anal segment of female very broadly triangulate. First valvulae of ovipositor with broad basal portion extending posteriorly for less than half of total length. Tegmina with Sc+R four times as long as Sc between Sc+R fork and stigmal fork, Sc in this distance shorter than stigma, Sc with two branches at margin, R with two, M with five, Cu 1 with two. Wings with first apical cell of R subequal to first apical cell of M, both shortly triangular.

Type of subgenus, *Oliarus maidis* Fenn. 1945. *Proc. U. S. Nat. Mus.*, Vol. 95, p. 423.

Oliarus (*Melanoliarus*) *maidis* Fenn.

(Figs. 4-13, 45.)

Aedeagus broad, tubular; an unarmed sclerotised plate forming a flattened sheath for apodeme of penis in its basal half, and extended laterally into a thin transverse plate in its distal half; apodeme of penis passing distally into a stout oblique sclerotised tube, armed at its distal edge with two strongly curved spines rotating in the same plane, and a long shallowly curved spine directed anteriorly.

Material of this species is to hand from Grenada (five males, three females, October 19-21, 1943), St. Vincent (three males, three females, August 20, 1941), and St. Lucia (18 males and 24 females, March 20-23, 1939 and on various dates 1940-44) all taken by the writer on maize, on the edge of woodland, or at light.

Oliarus (*Melanoliarus*) *campestris*, new species.

(Figs. 1-3, 44, 62.)

Male. Length, 3.2 mm.; tegmen, 3.3 mm. Female. Length, 3.2 mm.; tegmen, 3.5 mm. Piceous; margins and carinae of frons and pronotum, apex of scutellum, base of procoxae, femora at apex, tibiae externally and metatarsi pallid yellow.

Aedeagus broadly tubular, with a broad sclerotised plate ventrally in

its basal half bordered distally by a thick transverse ridge which bears at one end a straight stout spine directed laterally, and at the other end a slightly longer spine curved mesad, a twisted fold on right side of ventral plate in basal half; apodeme of penis passing distally into a stout sclerotised oblique cylinder which bears a short sinuate spine dorsally at its base, and two spines distally, one short and curved through 180° the other long, slightly sinuate and directed anteriorly.

The writer has collected this species in Jost Van Dyke, B.V.I. (one male, Feb. 18, 1944), Antigua (three males, one female, August 3, 1943), St. Kitts (nine males, thirteen females, on beans, September 7, 1943), Nevis (two males, four females, January 16, 1942), Hope, Jamaica (one male, one female, November 15, 1940).

Subtribe Myndina.

PARAMYNDUS Fenn.

Fennah 1945 *Proc. U. S. Nat. Mus.*, Vol. 95, p. 424. Genotype, *P. cocois* Fenn. *ibid.*

To this genus must be added the closely allied *Myndus crudus* Van Duzee from Jamaica (*Bull. Buff. Soc. Nat. Sci.* 1907, 8: 33), which in a comparison of two series of eight and thirteen males appears to differ from *cocois* constantly in the shape of the aedeagal armature and that of the hind margin of the pygofer, as shown in figures 65, 66, 67, and 68. *Paramyndus* differs from *elata musiva* Germar, the Old World genotype of *Myndus* Stål, in having the frons more dilated distally, its lateral carinae not so obliquely raised, the median ocellus very obscure, no distinct median transverse carina on vertex, the eyes strongly excavate below, the vertex 4.5 times the length of the pronotum in middle (3.0 times in *musivus*), the vertex covering the pronotal disc entirely, the tegmina with Cu forking basad of Sc+R fork, Sc+R forking six-sevenths of distance from basal cell to stigma, the greatest width of the tegmen scarcely four-fifths of length between Mf and apex of tegmen (equal in *musivus*), the wing with the first marginal cell of M 1.5 times as long as its stalk (about 5 times in *musivus*). From *Nymphocixia* V. D. it differs markedly in the form of the head and in the carinae of the frons.

TRIBE BOTHRIOCERINI.

BOTHRIOCERA Burm.

Burmeister 1835 *Handb. Ent.* 2 (1):156. Genotype, *B. tinealis* Burm., *ibid.*

Bothriocera eborea Fenn.

(Figs. 60, 61)

Fennah 1943, *Psyche*, 1, 2 : 14.

In the mount from which the original illustration of the aedeagal flagellum was made the apical spine was twisted to face mesally instead of postero-laterally. The flagellum of a specimen from Jost Van Dyke is figured to show the normal position of the flagellar appendages. In

addition to the localities already given this species has been collected by the writer in the following: Martinique, F.W.I. (one male, Fort de France, March 1944), Tortola, B.V.I. (two males, eight females, February 15-17, 1944), Jost Van Dyke, B.V.I. (three males, four females, February 18, 1944).

Bothriocera bicornis (F.)

Fabricius 1803 Syst. Rhyng.: 101.

One male and three females collected by the writer in Maracas Valley, Trinidad (January 21, 1945). The genitalia and pigmentation of the tegmina agree well with those of the species figured by Metcalf as *bicornis* (F.).

EXPLANATION OF PLATES.

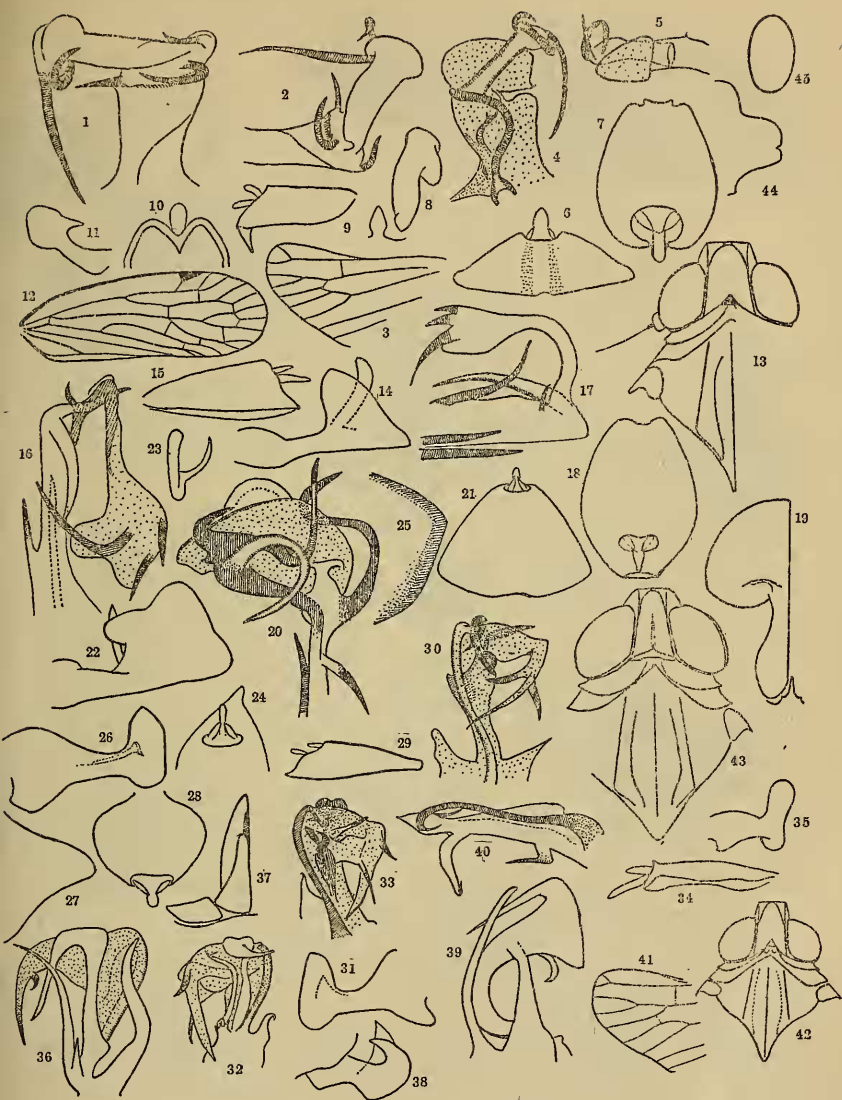
PLATE XI.

1. *Oliarus campestris* Fenn., aedeagus, ventral view (St. Kitts).
2. *O. campestris* Fenn., aedeagus, left side (shown with ventral surface uppermost).
3. *O. campestris* Fenn., antero-apical portion of left wing.
4. *Oliarus maidis* Fenn., aedeagus, dorsal view (St. Vincent).
5. *O. maidis* Fenn., aedeagus, right side.
6. *O. maidis* Fenn., anal segment of female, dorsal view.
7. *O. maidis* Fenn., anal segment of male.
8. *O. maidis* Fenn., medioventral process of pygofer and left genital style, ventral view.
9. *O. maidis* Fenn., anal segment of male, right side.
10. *O. maidis* Fenn., apical margin of anal segment of male, posteroventral view.
11. *O. maidis* Fenn., right genital style, side view.
12. *O. maidis* Fenn., right tegmen.
13. *O. maidis* Fenn., head and left half of thorax.
14. *Cyclopoliarus jamaicensis* Fenn., left genital style, lateral view.
15. *C. jamaicensis* Fenn., anal segment of male, left side.
16. *C. jamaicensis* Fenn., aedeagus, dorsal view.
17. *C. jamaicensis* Fenn., diagram of aedeagus viewed from right side.
18. *C. jamaicensis* Fenn., anal segment of male, dorsal view.
19. *C. jamaicensis* Fenn., left genital style, ventral view.
20. *C. naparimae* Fenn., aedeagus, dorsal view.
21. *C. jamaicensis* Fenn., anal segment of female.
22. *C. naparimae* Fenn., left genital style, side view.
23. *C. naparimae* Fenn., diagrammatic posterior view of left genital style.
24. *C. naparimae* Fenn., apical portion of anal segment of male.
25. *C. naparimae* Fenn., lateral margin of pygofer, left side.
26. *Vincentia hewanorrae* Fenn., left genital style, side view.
27. *V. hewanorrae* Fenn., lateral margin of pygofer, left side.
28. *V. hewanorrae* Fenn., anal segment of male, dorsal view.
29. *V. hewanorrae* Fenn., anal segment of male, right side.
30. *V. hewanorrae* Fenn., aedeagus, dorsal view.

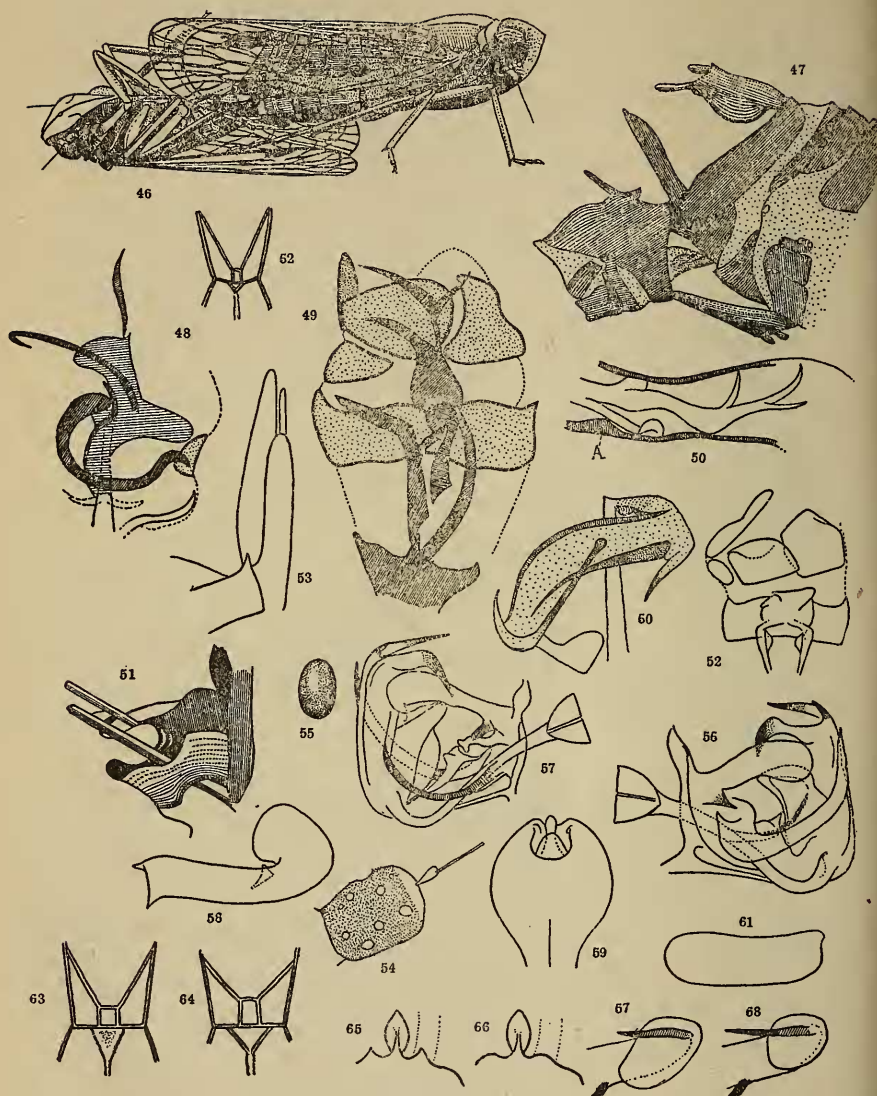
31. *V. christopheri* Fenn., right genital style.
32. *V. christopheri* Fenn., aedeagus, ventral view.
33. *V. christopheri* Fenn., aedeagus, dorsal view.
34. *V. christopheri* Fenn., anal segment of male, right side.
35. *V. interrupta* Uhl., left genital style.
36. *V. interrupta* Uhl., aedeagus, ventral view.
37. *V. interrupta* Uhl., valvulae of left side, ventral view.
38. *V. grenadana* Fenn., left genital style, side view.
39. *V. grenadana* Fenn., aedeagus, dorsal view.
40. *V. grenadana* Fenn., aedeagus, right side.
41. *V. christopheri* Fenn., apical portion of left wing.
42. *V. interrupta* Uhl., head and thorax.
43. *Cyclopolarus montserratensis* Fenn., head and thorax.
44. *Oliarus campestris* Fenn., posterior margin of pygofer, lateral view.
45. *O. maidis* Fenn., egg.

PLATE XII.

46. *Vincentia hewanorrae* Fenn. *in copula*.
47. *Vincentia hewanorrae* Fenn., position of genitalia during copulation.
48. *V. grenadana* Fenn., aedeagus extended in genital chamber, dorsal view.
49. *V. hewanorrae* Fenn., aedeagus extended in genital chamber, dorsal view.
50. *V. hewanorrae* Fenn., diagrammatic lateral view of aedeagus in genital chamber, shown upside down.
51. *V. grenadana* Fenn., semi-diagrammatic view of genital styles, medioventral process and first and second valvulae during copulation.
52. *V. christopheri* Fenn., outer portion of genital chamber, dorsal view, showing sclerotised areas.
53. *Cyclopolarus jamaicensis* Fenn., valvulae, left side.
54. *Vincentia interrupta* Uhl., antenna, ventral view.
55. *Vincentia hewanorrae* Fenn., egg.
56. *Oliarus concinnulus* Fowl., aedeagus (from drawing made by W. E. China from type).
57. *Oliarus concinnulus* Fowl., aedeagus (ditto).
58. *O. concinnulus* Fowl., left genital style (ditto).
59. *O. concinnulus* Fowl., anal segment of male (ditto).
60. *Bothriocera eborea* Fenn., aedeagus, dorsal view.
61. *B. eborea* Fenn., egg, side view.
62. *Oliarus campestris* Fenn., apex of vertex and base of frons.
63. *Vincentia hewanorrae* Fenn., ditto.
64. *Cyclopolarus naparimae* Fenn., ditto.
65. *Paramyndus crudus* (V. D.), medioventral portion of pygofer.
66. *Paramyndus cocois* Fenn., ditto.
67. *Paramyndus crudus* (V. D.), apex of aedeagus.
68. *Paramyndus cocois* Fenn., ditto.



Details of Lesser Antillean Cixiini.



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